

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00293

# MATERIAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Filtration Aid Solution  
**Catalog Number:** 104633

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00293  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** No effects anticipated.  
**Date of MSDS Preparation:**  
**Day:** 12  
**Month:** 07  
**Year:** 2004

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** > 99.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other components, each

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / volume  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** Clear, colorless, gelatinous liquid  
**Odor:** None

**HMIS:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** Practically non-toxic

**Target Organs:** Not applicable

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** No effects anticipated

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

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## 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

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## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Flush the spilled material to the drain with a large excess of water.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** Not applicable

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## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: heat freezing Store between 10° and 25°C.

**Flammability Class:** Not applicable

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Protect from: heat freezing

**TLV:** Not established

**PEL:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless, gelatinous liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 7

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** ~100°C; 212°F

**Melting Point:** Not available

**Specific Gravity (water = 1):** 0.992

**Evaporation Rate (water = 1):** 0.32

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible

**Acid:** Not determined

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures

**Reactivity / Incompatibility:** None reported

**Hazardous Decomposition:** No hazardous decomposition products known.

**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** None reported

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Open cold water tap completely, slowly pour the material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

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**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

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## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Not applicable

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

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**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

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## 16. OTHER INFORMATION

**Intended Use:** Flocculant

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. In-house information. Technical Judgment.

**Revision Summary:**

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### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00055

# Material Safety Data Sheet

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** NitriVer ® 3 Nitrite Reagent  
**Catalog Number:** 1407899

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00055  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 26  
**Month:** 03  
**Year:** 2003

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## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Chromatropic Acid, Disodium salt

**CAS No.:** 129-96-4  
**TSCA CAS Number:** 129-964  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 > 5000 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

### Sodium Sulfanilate

**CAS No.:** 515-74-2  
**TSCA CAS Number:** 515-742  
**Percent Range:** 5.0 - 15.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic properties unknown. May cause irritation.

### Potassium Pyrosulfate

**CAS No.:** 7790627  
**TSCA CAS Number:** 7790-62-7  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 2340 mg/kg  
**LC50:** None reported  
**TLV:** Not established

**PEL:** Not established  
**Hazard:** Causes eye burns.

**Potassium Phosphate, Monobasic**

**CAS No.:** 7778770  
**TSCA CAS Number:** 7778-77-0  
**Percent Range:** 75.0 - 85.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 7100 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

**1,2-Cyclohexanediaminetetraacetic Acid Trisodium Salt**

**CAS No.:** 36679-96-6  
**TSCA CAS Number:** 36679-96 6  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic properties unknown. May cause irritation.

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### **3. HAZARDS IDENTIFICATION**

***Emergency Overview:***

**Appearance:** White powder  
**Odor:** Not determined  
CAUSES EYE BURNS MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION

***HMIS:***

**Health:** 3  
**Flammability:** 0  
**Reactivity:** 0  
**Protective Equipment:** X - See protective equipment, Section 8.

***NFPA:***

**Health:** 2  
**Flammability:** 0  
**Reactivity:** 0  
**Symbol:** Not applicable

***Potential Health Effects:***

**Eye Contact:** Causes eye burns.  
**Skin Contact:** MAY CAUSE IRRITATION  
**Skin Absorption:** None reported  
**Target Organs:** None reported  
**Ingestion:** May cause: irritation of the mouth and esophagus Very large doses may cause: gastrointestinal disturbances cardiac depression kidney damage  
**Target Organs:** Heart Kidneys  
**Inhalation:** May cause: irritation of nose and throat  
**Target Organs:** None reported  
**Medical Conditions Aggravated:** Pre-existing: Eye conditions Kidney conditions Central nervous system diseases  
**Chronic Effects:** None reported  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**Toxicologically Synergistic Products:** None reported

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## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, this product decomposes to form toxic gases.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** Toxic fumes of: phosphorus oxides carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

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## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush the spilled material to the drain with a large excess of water.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

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## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: light heat moisture

**Flammability Class:** Not applicable

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat



**Inhalation Protection:** adequate ventilation  
**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling. Protect from: light heat moisture  
**TLV:** Not established  
**PEL:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White powder  
**Physical State:** Solid  
**Molecular Weight:** Not applicable  
**Odor:** Not determined  
**pH:** of 5% solution = 3.2  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** 224°C (435°F)  
**Specific Gravity (water = 1):** 3.12  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Not determined  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** 0.057 in/yr  
    **Aluminum:** 0.00 in/yr

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Excess moisture Extreme temperatures  
**Reactivity / Incompatibility:** None reported  
**Hazardous Decomposition:** Toxic fumes of: phosphorus oxides carbon dioxide carbon monoxide  
**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** None reported  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Chromatropic Acid: Oral rat LD50: >5000 mg/kg, Potassium Phosphate Monobasic: Oral rat LD50 = 7100 mg/kg, Potassium Pyrosulfate: Oral rat LD50 = 2340 mg/kg

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** --  
No ecological data available for the ingredients of this product.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Dilute material with excess water making a weaker than 5% solution. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

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## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

### **I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

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**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

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## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** This product contains a chemical(s) exempt from the TSCA 8(b) Inventory due to a Low Volume Exemption held by Hach Company.

**TSCA CAS Number:** Not applicable

1,2-Cyclohexanediaminetetraacetic Acid Trisodium Salt. This chemical may only be used as a chelating reagent for chemical reactions.

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## 16. OTHER INFORMATION

**Intended Use:** Determination of nitrite

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00062

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** NitraVer ® 6 Nitrate Reagent  
**Catalog Number:** 1412099

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00062  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Toxic. Causes eye burns. Cumulative poison. Recognized carcinogen. Experimental teratogen.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Potassium Pyrosulfate

**CAS No.:** 7790627  
**TSCA CAS Number:** 7790-62-7  
**Percent Range:** 5.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 2340 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes eye burns.

### 1,2-Cyclohexanediaminetetraacetic Acid Trisodium Salt

**CAS No.:** 36679-96-6  
**TSCA CAS Number:** 36679-96 6  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic properties unknown. May cause irritation.

### Potassium Phosphate, Monobasic

**CAS No.:** 777870  
**TSCA CAS Number:** 7778-77-0  
**Percent Range:** 10.0 - 20.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 7100 mg/kg  
**LC50:** None reported  
**TLV:** Not established

**PEL:** Not established  
**Hazard:** May cause irritation.

**Other components, each**

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

**Cadmium**

**CAS No.:** 7440439  
**TSCA CAS Number:** 7440-43-9  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 225 mg/kg  
**LC50:** Inhalation rat LC50 = 25 mg/m<sup>3</sup>/30min  
**TLV:** 0.01 mg/m<sup>3</sup>  
**PEL:** 0.005 mg/m<sup>3</sup>  
**Hazard:** Toxic. Recognized carcinogen. Cumulative poison. May cause irritation. Experimental teratogen.

**Sodium Sulfate**

**CAS No.:** 7757826  
**TSCA CAS Number:** 7757-82-6  
**Percent Range:** 50.0 - 60.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral mouse LD50 = 5989 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

**Magnesium Sulfate**

**CAS No.:** 10034-99-8  
**TSCA CAS Number:** 7487-88-9  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral mouse LDLo = 5000 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

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### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

**Appearance:** Blue metallic powder

**Odor:** None

CAUSES EYE BURNS HARMFUL IF SWALLOWED OR INHALED MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION

CONTAINS CADMIUM: CANCER HAZARD CAN CAUSE LUNG AND KIDNEY DISEASE

***HMIS:***

**Health:** 4

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** May cause irritation

**Skin Absorption:** Will be absorbed through the skin.

**Target Organs:** None reported

**Ingestion:** May cause: salivation vomiting abdominal pain anemia diarrhea kidney failure central nervous system effects

**Target Organs:** Kidneys Reproductive system Central nervous system

**Inhalation:** May cause: coughing headache nausea, vomiting chest pain pneumonitis respiratory tract irritation lung damage kidney damage

**Target Organs:** Kidneys Reproductive system Lungs

**Medical Conditions Aggravated:** Pre-existing: Respiratory conditions Kidney conditions

**Chronic Effects:** Chronic overexposure may cause cancer kidney damage liver damage bone damage (osteosclerosis)

**Cancer / Reproductive Toxicity Information:**

An ingredient of this product is an OSHA listed carcinogen.

Cadmium

An ingredient of this mixture is: IARC Group 2A: Suspected Carcinogen

Cadmium

An ingredient of this mixture is: NTP Listed Group 2A: Suspected Carcinogen

Cadmium

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

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## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Administer milk or beaten egg whites at frequent intervals. Induce vomiting using syrup of ipecac or by sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not available

**Hazardous Combustion Products:** Toxic fumes of: cadmium oxide phosphorus oxides sulfur oxides.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment. Releases of this material may contaminate the environment.

**Clean-up Technique:** Avoid contact with spilled material. Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as RCRA hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product. Use with adequate ventilation.

**Storage:** Protect from: moisture Keep away from: oxidizers powdered metals hydrazoic acid Store between 10° and 25°C.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Use a fume hood to avoid exposure to dust, mist or vapor. Have an eyewash station nearby.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling.

Protect from: moisture Keep away from: oxidizers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Blue metallic powder

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 5% solution = 4.2

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** decomposes > 200°C

**Specific Gravity (water = 1):** 2.377

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Partially soluble

**Acid:** Partially soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0.026 in/yr

**Aluminum:** 0.017 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Excess moisture

**Reactivity / Incompatibility:** Incompatible with: hydrazoic acid oxidizers metals

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides phosphorus oxides cadmium oxide

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** Cadmium - Cytogenetic analysis - hamster ovary 1 µmol/l

**Reproductive Effects Data:** Cadmium: Oral male rat TDLo = 155 mg/kg- 13 weeks pre-mating - effects on newborn growth and behavior; Oral female rat TDLo = 23 mg/kg- 1-22 days after conception - blood and lymphatic system abnormalities

**Ingredient Toxicological Data:** Cadmium: Oral rat LD50 = 225 mg/kg, Inhalation rat LC50 = 25 mg/m<sup>3</sup>/30 min; Sodium Sulfate Oral mouse LD50 = 5989 mg/kg; Potassium Phosphate Monobasic Oral rat LD50 = 7100 mg/kg; Potassium Pyrosulfate Oral rat LD50 = 2340 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:--**

No ecological data available for this product.

**Ingredient Ecological Information:--**

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D006

**Special Instructions (Disposal):** Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product contains Cadmium and is regulated under 29CFR Subpart Z 1910.1027. This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard.(29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Cadmium

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Cadmium 10 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** WARNING - This product contains a chemical known to the State of California to cause cancer.

**Identification of Prop. 65 Ingredient(s):** Cadmium, Polyacrilamide

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** This product contains a chemical(s) exempt from the TSCA 8(b) Inventory due to a Low Volume Exemption held by Hach Company.

**TSCA CAS Number:** Not applicable

1,2-Cyclohexanediaminetetraacetic Acid Trisodium Salt. This chemical may only be used as a chelating reagent for chemical reactions.

---

## 16. OTHER INFORMATION

**Intended Use:** Determination of nitrate

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards. Cincinnati: Department of Health and Human Services, 1981. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. In-house information. Technical Judgment.

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00035

# Material Safety Data Sheet

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** PhosVer ® 3 Phosphate Reagent  
**Catalog Number:** 212599

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00035  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 26  
**Month:** 03  
**Year:** 2003

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Potassium Pyrosulfate

**CAS No.:** 7790627  
**TSCA CAS Number:** 7790-62-7  
**Percent Range:** 75.0 - 85.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 2340 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes eye burns.

### Ascorbic Acid

**CAS No.:** 50817  
**TSCA CAS Number:** 50-81-7  
**Percent Range:** 15.0 - 25.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 11900 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Practically non-toxic.

### Sodium Molybdate

**CAS No.:** 10102-40-6  
**TSCA CAS Number:** 7631-95-0  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 4000 mg/kg.  
**LC50:** Inhalation rat LC50 = > 2080 mg/m<sup>3</sup>/4 hrs  
**TLV:** 5 mg/m<sup>3</sup> (as Mo)

**PEL:** 5 mg/m<sup>3</sup> (as Mo)

**Hazard:** May cause irritation.

**Other components, each**

**CAS No.:** Not applicable

**TSCA CAS Number:** Not applicable

**Percent Range:** 0.1 - 1.0

**Percent Range Units:** weight / weight

**LD50:** Not applicable

**LC50:** Not applicable

**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

---

### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

**Appearance:** White to off-white powder

**Odor:** None

CAUSES EYE BURNS MAY CAUSE RESPIRATORY TRACT IRRITATION

***HMIS:***

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

***NFPA:***

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

***Potential Health Effects:***

**Eye Contact:** Causes eye burns.

**Skin Contact:** No effects are anticipated

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: copper deficiency anemia gout loss of appetite loss of coordination listlessness diarrhea liver damage May effect enzyme activity.

**Target Organs:** Blood Liver

**Inhalation:** May cause: respiratory tract irritation Effects similar to those of ingestion.

**Target Organs:** Blood Liver

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Respiratory conditions Gout

**Chronic Effects:** Chronic overexposure may cause copper deficiency enzyme activity effects liver damage Molybdenum poisoning signs include loss of appetite, listlessness and reduced growth rate. Excessive exposure to molybdenum compounds may cause gout and anemia.

***Cancer / Reproductive Toxicity Information:***

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: sulfur oxides. carbon monoxide, carbon dioxide. sodium monoxide

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes. Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes. Do not breathe: dust. Wash thoroughly after handling.

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White to off-white powder  
**Physical State:** Solid  
**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** of a 5% solution = 1.5  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** 105 °C (221 °F)  
**Specific Gravity (water = 1):** 2.22  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** Not applicable  
    **Aluminum:** Not applicable

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Extreme temperatures  
**Reactivity / Incompatibility:** Incompatible with: oxidizers dyes alkalies iron copper  
**Hazardous Decomposition:** Heating to decomposition releases: carbon dioxide carbon monoxide sulfur oxides  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** None reported  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Potassium Pyrosulfate Oral rat LD50 = 2340 mg/kg; Sodium Molybdate Oral rat LD50 = 4000 mg/kg, Inhalation rat LC50 > 2080mg/m<sup>3</sup>/4 hr; Ascorbic Acid Oral rat LD50 = 11.9 g/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** --  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None  
**Special Instructions (Disposal):** Work in an approved fume hood. Dilute material with excess water making a weaker than 5% solution. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

### **I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Phosphate determination

**References:** TLV's Threshold Limit Values and Biological Exposure Indices for 1992/1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. In-house information. Technical Judgment. Outside Testing. NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards. Cincinnati: Department of Health and Human Services, 1981. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Vendor Information. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981.

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00146

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Folding Stove w/ Fuel Tablets  
**Catalog Number:** 220600

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00146  
**Chemical Name:** 1,3,5,7-Tetraazatricyclo[3.3.1.1<sup>3,7</sup>]decane  
**CAS No.:** 100-970  
**Chemical Formula:** C<sub>6</sub>H<sub>12</sub>N<sub>4</sub>  
**Chemical Family:** Aromatic Amines  
**Hazard:** May cause irritation. Flammable solid. May cause allergic reaction.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Hexamethylenetetramine**  
**CAS No.:** 100-97-0  
**TSCA CAS Number:** 100-970  
**Percent Range:** 100.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral mouse LDLo = 512 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation. Flammable solid. May cause allergic reaction.

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** White powder  
**Odor:** None  
HARMFUL IF SWALLOWED MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION  
DECOMPOSITION FORMS FORMALDEHYDE FLAMMABLE SOLID

**HMIS:**  
**Health:** 2  
**Flammability:** 1  
**Reactivity:** 1  
**Protective Equipment:** X - See protective equipment, Section 8.  
**NFPA:**  
**Health:** 2  
**Flammability:** 1  
**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** May cause irritation May cause allergic reaction

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: abdominal pain gastrointestinal irritation kidney damage

**Target Organs:** Kidneys

**Inhalation:** May cause: respiratory tract irritation

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions Allergies or sensitivity to hexamethylenetetramine.

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Remove contaminated clothing. Call physician if irritation develops.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Exposure to heat may promote violent decomposition. Can burn in fire, releasing toxic vapors.

**Flash Point:** 236°C (482°F)

**Method:** Open cup

**Flammability Limits:**

**Lower Explosion Limits:** Not determined

**Upper Explosion Limits:** Not determined

**Autoignition Temperature:** 410°C (770°F)

**Hazardous Combustion Products:** May emit toxic and corrosive fumes.

**Fire / Explosion Hazards:** Do not expose to sparks or other ignition sources. Do not expose to flames. May react violently with: strong acids strong oxidizers

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Water spray to cool containers Dry chemical. Water. Carbon dioxide Alcohol foam.

**Fire Fighting Instruction:** Containers can build up pressure if exposed to heat. As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Remove all combustible material from spill area. Remove all ignition and spark-creating sources from the spill area. May be ignited by: heat, sparks, or flames. damp conditions or water. Cover spilled solid material with sand or other inert material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Eliminate all sources of ignition. Use only non-sparking tools. Avoid contact with spilled material. Sweep up material. Incinerate material at an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 133

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep away from: acids oxidizers

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Keep away from: acids/acid fumes oxidizers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White powder

**Physical State:** Solid

**Molecular Weight:** 140.19

**Odor:** None

**pH:** 0.2 M solution = 8.4

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Sublimes @ 280°C (536°F)

**Melting Point:** Sublimes @ 280°C (536°F)

**Specific Gravity (water = 1):** 1.33

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not available

**Partition Coefficient (n-octanol / water):** Not available

**Solubility:**

**Water:** 1 g/ 1.5 ml H<sub>2</sub>O

**Acid:** Decomposes

**Other:** 1 g/ 12.5 ml alcohol; 1 g/ 320 ml ether; 1 g/ 10 ml chloroform

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heating to decomposition.

**Reactivity / Incompatibility:** May explode in contact with: acids acetic acid nitric acid ammonia salts

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: nitrogen oxides formaldehyde

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION



***Product Toxicological Data:***

***LD50:*** Oral mouse LDLo = 512 mg/kg

***LC50:*** None reported

***Dermal Toxicity Data:*** None reported

***Skin and Eye Irritation Data:*** None reported

***Mutation Data:*** Cytogenic analysis in human Hela cells @ 1 mmol/l; Oncogenic Transformation- hamster kidney - 10 mg/L

***Reproductive Effects Data:*** None reported

***Ingredient Toxicological Data:*** --

Not applicable

---

## 12. ECOLOGICAL INFORMATION

***Product Ecological Information:*** Water Pollution Factors: BOD<sub>5</sub>: 0.015; 0.026 std. dil. sew.

***Ingredient Ecological Information:*** --

Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

***EPA Waste ID Number:*** D001

***Special Instructions (Disposal):*** Dispose of material in an E.P.A. approved hazardous waste facility.

***Empty Containers:*** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

***NOTICE (Disposal):*** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

***D.O.T.:***

***D.O.T. Proper Shipping Name:*** Hexamethylenetetramine

--

***DOT Hazard Class:*** 4.1

***DOT Subsidiary Risk:*** NA

***DOT ID Number:*** UN1328

***DOT Packing Group:*** III

***I.C.A.O.:***

***I.C.A.O. Proper Shipping Name:*** Hexamethylenetetramine

--

***ICAO Hazard Class:*** 4.1

***ICAO Subsidiary Risk:*** NA

***ICAO ID Number:*** UN1328

***ICAO Packing Group:*** III

***I.M.O.:***

***I.M.O. Proper Shipping Name:*** Hexamethylenetetramine

--

***I.M.O. Hazard Class:*** 4.1

***I.M.O. Subsidiary Risk:*** NA

***I.M.O. ID Number:*** UN1328

***I.M.O. Packing Group:*** III

---

## 15. REGULATORY INFORMATION

***U.S. Federal Regulations:***

***O.S.H.A.:*** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

***E.P.A.:***

***S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):*** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Fire Hazard

***S.A.R.A. Title III Section 313 (40 CFR 372):*** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00127

# Material Safety Data Sheet

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Ammonia Salicylate Reagent  
**Catalog Number:** 2395266

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00127  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause irritation. Harmful if swallowed  
**Date of MSDS Preparation:**  
**Day:** 26  
**Month:** 03  
**Year:** 2003

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Salicylate

**CAS No.:** 54247  
**TSCA CAS Number:** 54-21-7  
**Percent Range:** 40.0 - 50.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 1200 mg/kg; Oral mouse LD<sub>50</sub> = 540 mg/kg; Oral rabbit LD<sub>50</sub> = 1700 mg/kg.  
**LC50:** None reported.  
**TLV:** Not established.  
**PEL:** Not established.  
**Hazard:** May cause irritation. Experimental teratogen. Experimental mutagen. May be embryotoxic.

### Sodium Nitroferri cyanide

**CAS No.:** 14402-89-2  
**TSCA CAS Number:** 14402-89 2  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 99 mg/kg (anhydrous).  
**LC50:** None reported.  
**TLV:** 5 mg/m<sup>3</sup> as CN<sup>-</sup>  
**PEL:** 5 mg/m<sup>3</sup> as CN<sup>-</sup>  
**Hazard:** Highly toxic. Harmful if inhaled.

### Other components, each

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** 0.1 - 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

#### **Sodium Citrate**

**CAS No.:** 68042

**TSCA CAS Number:** 68-04-2

**Percent Range:** 40.0 - 50.0

**Percent Range Units:** weight / weight

**LD50:** Oral rat LD50 >8 g/Kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

#### **Sodium Tartrate**

**CAS No.:** 6106247

**TSCA CAS Number:** 868-188

**Percent Range:** 10.0 - 20.0

**Percent Range Units:** weight / weight

**LD50:** Oral rabbit LD50 = 5290 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

---

### **3. HAZARDS IDENTIFICATION**

#### ***Emergency Overview:***

**Appearance:** Tan powder

**Odor:** None

HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION

CONTACT WITH ACIDS FORMS TOXIC FUMES

#### ***HMIS:***

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

#### ***NFPA:***

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

#### ***Potential Health Effects:***

**Eye Contact:** MAY CAUSE IRRITATION

**Skin Contact:** MAY CAUSE IRRITATION

**Skin Absorption:** Harmful if absorbed through the skin Effects similar to those of ingestion Sodium nitroferrocyanide produces a delayed cyanide poisoning reaction.

**Target Organs:** Central nervous system Blood

**Ingestion:** Sodium nitroferrocyanide produces a delayed cyanide poisoning reaction. May cause: headache nausea vomiting central nervous system effects

**Target Organs:** Central nervous system Blood

**Inhalation:** Sodium nitroferrocyanide produces a delayed cyanide poisoning reaction. May cause: headache nausea, vomiting central nervous system effects

**Target Organs:** Central nervous system Blood

**Medical Conditions Aggravated:** Allergies or sensitivity to aspirin or salicylates.

**Chronic Effects:** Chronic overexposure may cause confusion diarrhea fatigue weakness death Salicylates may cause ringing in the ears (tinnitus), abnormal bleeding, gastric ulceration, mental deterioration, skin eruption, temporary vision loss, and other optical effects.

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen. an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Induce vomiting using syrup of ipecac or by sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, this product decomposes to form toxic gases.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined.

**Hazardous Combustion Products:** May emit acrid smoke and fumes.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Dry chemical. Carbon dioxide. Alcohol foam.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Stop spilled material from being released to the environment.

**Clean-up Technique:** Avoid contact with spilled material. Sweep up material. Dilute with a large excess of water. Flush the spilled material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C. Keep away from: acids / acid fumes. oxidizers

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Use a fume hood to avoid exposure to dust, mist or vapor.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** lab coat disposable latex gloves

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Use with adequate ventilation. Keep away from: acids/acid fumes oxidizers

**TLV:** Not established.

**PEL:** Not established.

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Tan powder

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 7.84 (5% solution)

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** 97°C (206.6°F)

**Specific Gravity (water = 1):** 1.689

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** None.

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble.

**Acid:** Soluble.

**Other:** Not determined.

**Metal Corrosivity:**

**Steel:** Not applicable

**Aluminum:** Not applicable

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heating to decomposition. Extreme temperatures

**Reactivity / Incompatibility:** Incompatible with: acids iodine iron salts lead acetate organic materials oxidizers silver nitrate sodium phosphate

**Hazardous Decomposition:** Contact with acids/acid fumes releases toxic cyanide gas. Heating to decomposition releases toxic and/or corrosive fumes of: cyanide nitrogen oxides sodium oxides

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported.

**LC50:** None reported.

**Dermal Toxicity Data:** None reported.

**Skin and Eye Irritation Data:** None reported.

**Mutation Data:** None reported.

**Reproductive Effects Data:** None reported.

**Ingredient Toxicological Data:** Sodium Salicylate: Oral rat LD<sub>50</sub> = 1200 mg/kg; Sodium Citrate: Oral rat LD<sub>50</sub> > 8 g/kg; Sodium Tartrate: Oral rabbit LD<sub>50</sub> = 5290 mg/kg; Sodium Nitroferrocyanide: Oral rat LD<sub>50</sub> = 99 mg/kg.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:--**

No ecological data available for this product.

**Ingredient Ecological Information:--**

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Flush system with plenty of water.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Sodium Nitroferrocyanide.

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00128

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Ammonia Cyanurate Reagent  
**Catalog Number:** 2395466

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00128  
**Chemical Name:** Not Applicable  
**CAS No.:** Not Applicable  
**Chemical Formula:** Not Applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes burns.  
**Date of MSDS Preparation:**  
**Day:** 1  
**Month:** 07  
**Year:** 2003

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Dichloroisocyanurate

**CAS No.:** 2893789  
**TSCA CAS Number:** 2893-78-9  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 1400 mg/kg; Oral human LDLo = 3570 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Oxidizer. Causes eye burns.

### Lithium Hydroxide, Anhydrous

**CAS No.:** 1310663  
**TSCA CAS Number:** 1310-65-2  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 225 mg/kg  
**LC50:** Inhalation rat LC50 = 980 mg/m<sup>3</sup>/4H  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic. Causes severe burns.

### Sodium Citrate

**CAS No.:** 68042  
**TSCA CAS Number:** 68-04-2  
**Percent Range:** 80.0 - 90.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 >8 g/Kg  
**LC50:** None reported  
**TLV:** Not established

**PEL:** Not established  
**Hazard:** May cause irritation.

**Sodium Tartrate**

**CAS No.:** 6106247  
**TSCA CAS Number:** 868-188  
**Percent Range:** 5.0 - 15.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rabbit LD50 = 5290 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White powder  
**Odor:** Chlorine  
CAUSES BURNS HARMFUL IF SWALLOWED  
MAY CAUSE KIDNEY OR LIVER DAMAGE BASED ON ANIMAL DATA

**HMIS:**

**Health:** 3  
**Flammability:** 1  
**Reactivity:** 1  
**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2  
**Flammability:** 1  
**Reactivity:** 1  
**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.  
**Skin Contact:** Causes burns.  
**Skin Absorption:** None reported  
**Target Organs:** None reported  
**Ingestion:** Causes: burns May cause: dizziness nausea kidney damage liver damage  
**Target Organs:** Liver Kidneys Central nervous system Bone marrow  
**Inhalation:** Causes: burns May cause: shortness of breath coughing  
**Target Organs:** None reported  
**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions  
**Chronic Effects:** Lithium compounds have been implicated in development of aplastic anemia. Signs of lithium poisoning include dehydration, extreme weight loss, fine tremor of hands, nausea, vomiting and diarrhea, Chronic overexposure may cause central nervous system effects kidney damage liver damage  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.



**Skin Contact (First Aid):** Wash skin with soap and plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, irritating and highly toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** May emit toxic and corrosive fumes.

**Fire / Explosion Hazards:** Not combustible.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Dry chemical. Carbon dioxide. Water.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Cover spilled solid material with sand or other inert material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing. Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: heat moisture. Store away from: acids / acid fumes.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing. Do not breathe: dust. Wash thoroughly after handling. Keep away from: acids/acid fumes metals

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White powder  
**Physical State:** Solid  
**Molecular Weight:** Not applicable  
**Odor:** Chlorine  
**pH:** of a 5% solution = 12.33  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** >240 °C, >464 °F  
**Specific Gravity (water = 1):** 1.783  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** None reported  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** 0.00 in/yr  
    **Aluminum:** 0.803 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Heating to decomposition. Extreme temperatures Excess moisture  
**Reactivity / Incompatibility:** Incompatible with: acids  
**Hazardous Decomposition:** Contact with acids releases toxic and/or corrosive fumes of: chlorides nitrogen oxides  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** None reported  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Sodium Citrate Oral rat LD50 > 8 g/kg; Sodium Tartrate Oral rabbit LD50 = 5290 mg/kg; Lithium Hydroxide Oral rat LD50 = 225 mg/kg; Sodium Dichloroisocyanurate Oral rat LD50 = 1400 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:--**  
No ecological data available for this product.  
**Ingredient Ecological Information:--**  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None  
**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Flush system with plenty of water.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

### *D.O.T.:*

*D.O.T. Proper Shipping Name:* Lithium Hydroxide, Solid Mixture

--

*DOT Hazard Class:* 8

*DOT Subsidiary Risk:* NA

*DOT ID Number:* UN2680

*DOT Packing Group:* II

### *I.C.A.O.:*

*I.C.A.O. Proper Shipping Name:* Lithium Hydroxide, Solid Mixture

--

*ICAO Hazard Class:* 8

*ICAO Subsidiary Risk:* NA

*ICAO ID Number:* UN2680

*ICAO Packing Group:* II

### *I.M.O.:*

*I.M.O. Proper Shipping Name:* Lithium Hydroxide, Solid

--

*I.M.O. Hazard Class:* 8

*I.M.O. Subsidiary Risk:* NA

*I.M.O. ID Number:* UN2680

*I.M.O. Packing Group:* II

---

## 15. REGULATORY INFORMATION

### *U.S. Federal Regulations:*

*O.S.H.A.:* This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### *E.P.A.:*

*S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):* Delayed (Chronic) Health Hazard Immediate (Acute) Health Hazard

*S.A.R.A. Title III Section 313 (40 CFR 372):* This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

*302 (EHS) TPQ (40 CFR 355):* Not applicable

*304 CERCLA RQ (40 CFR 302.4):* Not applicable

*304 EHS RQ (40 CFR 355):* Not applicable

*Clean Water Act (40 CFR 116.4):* Not applicable

*RCRA:* Contains no RCRA regulated substances.

*C.P.S.C.:* Not applicable

### *State Regulations:*

*California Prop. 65:* No Prop. 65 listed chemicals are present in this product.

*Identification of Prop. 65 Ingredient(s):* Not applicable

*Trade Secret Registry:* Not applicable

### *National Inventories:*

*U.S. Inventory Status:* All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

*TSCA CAS Number:* Not applicable

---

## 16. OTHER INFORMATION

*Intended Use:* Reagent for ammonia test

*References:* NIOSH Registry of Toxic Effects of Chemical Substances, 1985/86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Technical Judgment. In-house information. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

*Revision Summary:* Updates in Section(s) 14, European MSDS Only

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00371

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sodium Thiosulfate Standard Solution, Stabilized, 0.0109 N  
**Catalog Number:** 2408932

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00371  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause irritation.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Propylene Glycol

**CAS No.:** 57556  
**TSCA CAS Number:** 57-55-6  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** volume / volume  
**LD50:** Oral rat LD50 = 20 g/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 70.0 - 80.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Sodium Thiosulfate

**CAS No.:** 10102-17-7  
**TSCA CAS Number:** 7772-98-7  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / volume  
**LD50:** Oral rat LD50 > 8 gm/kg  
**LC50:** None reported  
**TLV:** Not established

**PEL:** Not established  
**Hazard:** May cause irritation.

**Sodium Sulfate**

**CAS No.:** 7757826  
**TSCA CAS Number:** 7757-82-6  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / volume  
**LD50:** Oral mouse LD50 = 5989 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

**Appearance:** Clear, colorless liquid  
**Odor:** Sweet  
MAY CAUSE EYE AND SKIN IRRITATION

***HMIS:***

**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0  
**Protective Equipment:** X - See protective equipment, Section 8.

***NFPA:***

**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0  
**Symbol:** Not applicable

***Potential Health Effects:***

**Eye Contact:** May cause irritation  
**Skin Contact:** May cause irritation  
**Skin Absorption:** No effects anticipated  
**Target Organs:** Not applicable  
**Ingestion:** Very large doses may cause: central nervous system depression kidney damage rapid pulse and respirations  
**Target Organs:** None reported  
**Inhalation:** No effects anticipated  
**Target Organs:** Not applicable  
**Medical Conditions Aggravated:** None reported  
**Chronic Effects:** None reported  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.  
**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.  
**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, this product decomposes to form toxic gases.

**Flash Point:** > 100°C (212°F)

**Method:** Open cup

**Flammability Limits:**

**Lower Explosion Limits:** Not determined

**Upper Explosion Limits:** Not determined

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: sodium oxides carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Absorb spilled liquid with non-reactive sorbent material. Sweep up material. Place material in a plastic bag. Mark bag 'Non-hazardous trash', and dispose of as normal refuse. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: oxidizers

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: mist/vapor Wash thoroughly after handling.

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Sweet  
**pH:** 9.9  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** 99°C (210°F)  
**Melting Point:** -5°C (23°F)  
**Specific Gravity (water = 1):** 1.05  
**Evaporation Rate (water = 1):** 0.91  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** 0.006 in/yr  
    **Aluminum:** 0.003 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Heat Evaporation  
**Reactivity / Incompatibility:** Incompatible with: oxidizers  
**Hazardous Decomposition:** Toxic fumes of: sodium oxides carbon monoxide carbon dioxide  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** None reported  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Propylene Glycol: Oral rat LD50 = 20 g/kg, Sodium Sulfate: Oral mouse LD50 = 5989 mg/kg, Sodium Thiosulfate: Oral rat LD50 > 8 g/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:--**  
No ecological data available for this product.  
**Ingredient Ecological Information:--**  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None  
**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**  
    **D.O.T. Proper Shipping Name:** Not Currently Regulated

--  
**DOT Hazard Class:** NA  
**DOT Subsidiary Risk:** NA  
**DOT ID Number:** NA  
**DOT Packing Group:** NA  
**I.C.A.O.:**  
**I.C.A.O. Proper Shipping Name:** Not Currently Regulated  
--  
**ICAO Hazard Class:** NA  
**ICAO Subsidiary Risk:** NA  
**ICAO ID Number:** NA  
**ICAO Packing Group:** NA  
**I.M.O.:**  
**I.M.O. Proper Shipping Name:** Not Currently Regulated  
--  
**I.M.O. Hazard Class:** NA  
**I.M.O. Subsidiary Risk:** NA  
**I.M.O. ID Number:** NA  
**I.M.O. Packing Group:** NA

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Titrant solution

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991.

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume



World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00437

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sulfuric Acid Standard Solution, 5.25 N  
**Catalog Number:** 244932

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00437  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Harmful if inhaled. Carcinogen. Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 29  
**Month:** 06  
**Year:** 2004

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 70.0 - 80.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Sulfuric Acid

**CAS No.:** 7664939  
**TSCA CAS Number:** 7664-93-9  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 2140 mg/kg.  
**LC50:** Inhalation rat LC50 = 87 ppm/4 hr  
**TLV:** 1 mg/m<sup>3</sup> (TWA); 3 mg/m<sup>3</sup> (STEL)  
**PEL:** 1 mg/m<sup>3</sup>  
**Hazard:** Causes severe burns. Harmful if inhaled. Recognized carcinogen.

---

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** None

CAUSES EYE BURNS HARMFUL IF INHALED MAY CAUSE SKIN IRRITATION

**HMIS:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 2

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 2

**Symbol:** Water Reactive

**Potential Health Effects:**

**Eye Contact:** Causes severe burns

**Skin Contact:** May cause irritation

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** Causes: severe burns May cause: circulatory disturbances diarrhea nausea vomiting rapid pulse and respirations

**Target Organs:** None reported

**Inhalation:** Causes: severe burns May cause: teeth erosion mouth soreness difficult breathing

**Target Organs:** Lungs

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

**Chronic Effects:** Chronic overexposure may cause erosion of the teeth chronic irritation or inflammation of the lungs cancer

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen

Sulfuric Acid - The IARC evaluation was based on exposure to the mist or vapor of concentrated sulfuric acid generated during chemical processes.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** Contact with metals gives off hydrogen gas which is flammable May react violently with: strong bases water

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Dry chemical. Do NOT use water.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as a water pollutant. Mixture contains a component which is regulated as hazardous waste.

**304 EHS RQ (40 CFR 355):** Sulfuric Acid - RQ 1000 lbs.

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use. Protect from: heat Keep away from: alkalies oxidizers reducers metals

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Maintain general industrial hygiene practices when using this product. Use a fume hood to avoid exposure to dust, mist or vapor.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Protect from: heat Keep away from: alkalies metals oxidizers reducers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** < 0.5

**Vapor Pressure:** Not determined.

**Vapor Density (air = 1):** Not determined.

**Boiling Point:** Not determined.

**Melting Point:** Not applicable

**Specific Gravity (water = 1):** 1.149

**Evaporation Rate (water = 1):** 0.85

**Volatile Organic Compounds Content:** None.

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible.

**Acid:** Miscible.

**Other:** Not determined.  
**Metal Corrosivity:**  
**Steel:** 0.230 in/yr (5.842 mm/yr)  
**Aluminum:** >0.25 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Extreme temperatures Heating to decomposition.  
**Reactivity / Incompatibility:** May react violently in contact with: strong bases oxidizers reducers Incompatible with: metals  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides Contact with metals may release flammable hydrogen gas.  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
**LD50:** None reported.  
**LC50:** None reported.  
**Dermal Toxicity Data:** None reported.  
**Skin and Eye Irritation Data:** This product is not corrosive to skin. Absent to very slight erythema. No edema. (OECD Number 404, Acute Dermal Irritation/Corrosion)  
**Mutation Data:** None reported.  
**Reproductive Effects Data:** None reported.  
**Ingredient Toxicological Data:** Sulfuric Acid: Oral rat LD<sub>50</sub> = 2140 mg/kg; Inhalation rat LC<sub>50</sub> = 347 ppm/1hr.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** Sulfuric Acid: The 48-Hour TLm in flounder is 100-300 ppm.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002  
**Special Instructions (Disposal):** Work in an approved fume hood. Dilute material with excess water making a weaker than 5% solution. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**  
**D.O.T. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.  
(<45% Sulfuric Acid in Solution)  
**DOT Hazard Class:** 8  
**DOT Subsidiary Risk:** NA  
**DOT ID Number:** UN3264  
**DOT Packing Group:** III  
**I.C.A.O.:**  
**I.C.A.O. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.  
(<45% Sulfuric Acid in Solution)  
**ICAO Hazard Class:** 8  
**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN3264

**ICAO Packing Group:** III

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Corrosive Liquid, Acidic, Inorganic, N.O.S.  
(<45% Sulfuric Acid in Solution)

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN3264

**I.M.O. Packing Group:** III

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Reactive  
Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Sulfuric Acid 1000 lbs.

**304 CERCLA RQ (40 CFR 302.4):** Sulfuric Acid 1000 lbs.

**304 EHS RQ (40 CFR 355):** Sulfuric Acid - RQ 1000 lbs.

**Clean Water Act (40 CFR 116.4):** Sulfuric acid - RQ 1000 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** The label for this product bears the signal word "POISON" because the concentration of Sulfuric Acid in the product is greater than/equal to 10%.

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Laboratory Reagent

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548)- Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

**Revision Summary:**

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00438

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sodium Hydroxide Solution 5.0 N  
**Catalog Number:** 245032

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00438  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes severe burns.  
**Date of MSDS Preparation:**  
**Day:** 29  
**Month:** 06  
**Year:** 2004

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Hydroxide

**CAS No.:** 1310732  
**TSCA CAS Number:** 1310-73-2  
**Percent Range:** 10.0 - 20.0  
**Percent Range Units:** weight / volume  
**LD50:** Oral rat LDLo = 500 mg/kg.  
**LC50:** None reported  
**TLV:** 2 mg/m<sup>3</sup>  
**PEL:** 2 mg/m<sup>3</sup>  
**Hazard:** Causes severe burns. Toxic.

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 80.0 - 90.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

---

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** Clear, colorless  
**Odor:** None  
CAUSES SEVERE BURNS

**HMIS:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes severe burns

**Skin Contact:** Causes severe burns May cause: scarring

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** Causes: severe burns

**Target Organs:** None reported

**Inhalation:** Causes: severe burns May cause: pneumonitis

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Respiratory conditions Skin conditions

**Chronic Effects:** Chronic overexposure may cause destruction of any tissue contacted

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment. Dike the spill to contain material for later disposal.

**Clean-up Technique:** Cover spilled material with a dry acid, such as citric or boric. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a weak acid solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as hazardous waste. Mixture contains a component which is regulated as a water pollutant.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use. Store in a cool, dry place. Keep away from: acids / acid fumes. heat

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use general ventilation to minimize exposure to mist, vapor or dust.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Use with adequate ventilation. Keep away from: acids/acid fumes heat

**TLV:** 2 mg/m<sup>3</sup>

**PEL:** 2 mg/m<sup>3</sup>

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 14

**Vapor Pressure:** Not determined.

**Vapor Density (air = 1):** Not determined.

**Boiling Point:** 100°C (212°F)

**Melting Point:** Not applicable

**Specific Gravity (water = 1):** 1.181

**Evaporation Rate (water = 1):** 0.59

**Volatile Organic Compounds Content:** None.

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible.

**Acid:** Miscible.

**Other:** Not determined.

**Metal Corrosivity:**

**Steel:** 0.00 in/yr (0.00 mm/yr)

**Aluminum:** > 20 in/yr (> 508 mm/yr)

---



## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures

**Reactivity / Incompatibility:** Incompatible with: acids

**Hazardous Decomposition:** No hazardous decomposition products known.

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported.

**LC50:** None reported.

**Dermal Toxicity Data:** None reported.

**Skin and Eye Irritation Data:** None reported.

**Mutation Data:** None reported.

**Reproductive Effects Data:** None reported.

**Ingredient Toxicological Data:** Sodium Hydroxide: Oral rat LDLo = 500 mg/kg; Several skin and eye irritation test results reported in RTECS.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002

**Special Instructions (Disposal):** Work in an approved fume hood. Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty containers as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Sodium Hydroxide Solution

--

**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN1824

**DOT Packing Group:** II

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Sodium Hydroxide Solution

--

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN1824

**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Sodium Hydroxide Solution

--

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN1824

---

## 15. REGULATORY INFORMATION

### *U.S. Federal Regulations:*

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### *E.P.A.:*

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Sodium Hydroxide 1000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Sodium Hydroxide - RQ = 1000 lbs. (454 kgs.)

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** The label for this product bears the signal word "POISON" because the concentration of Sodium Hydroxide in the product is greater than/equal to 10%.

### *State Regulations:*

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** --

**Trade Secret Registry:** Not applicable

### *National Inventories:*

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Standard solution

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists 1992.

**Revision Summary:**

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### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

**HACH COMPANY ©2004**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00039

# Material Safety Data Sheet

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Potassium Persulfate  
**Catalog Number:** 245199

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00039  
**Chemical Name:** Peroxydisulfuric Acid, Dipotassium Salt  
**CAS No.:** 7727-21-1  
**Chemical Formula:** K<sub>2</sub>S<sub>2</sub>O<sub>8</sub>  
**Chemical Family:** Oxidizing Agents  
**Hazard:** Causes severe eye irritation. Oxidizer. Allergen  
**Date of MSDS Preparation:**  
**Day:** 26  
**Month:** 03  
**Year:** 2003

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Potassium Persulfate**  
**CAS No.:** 7727-21-1  
**TSCA CAS Number:** 7727-21-1  
**Percent Range:** 100.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral Rat LD50 = 802 mg/kg  
**LC50:** None reported  
**TLV:** 5 mg/m<sup>3</sup>  
**PEL:** Not established  
**Hazard:** Causes severe eye irritation. Oxidizer. Allergen

---

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White to light yellow crystals

**Odor:** None

CAUSES EYE AND RESPIRATORY TRACT IRRITATION

MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTIONS

STRONG OXIDIZER: CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE

**HMIS:**

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 0

**Reactivity:** 0

*Symbol:* oxy

**Potential Health Effects:**

*Eye Contact:* Causes severe irritation

*Skin Contact:* MAY CAUSE IRRITATION May cause allergic reaction

*Skin Absorption:* None reported

*Target Organs:* None reported

*Ingestion:* May cause: gastrointestinal irritation

*Target Organs:* None reported

*Inhalation:* Causes: irritation of nose and throat May cause: allergic respiratory reaction

*Target Organs:* None reported

*Medical Conditions Aggravated:* Pre-existing: Allergies or sensitivity to potassium persulfate.

*Chronic Effects:* Chronic overexposure may cause allergic skin reactions allergic respiratory reactions

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

*Eye Contact:* Immediately flush eyes with water for 15 minutes. Call physician.

*Skin Contact (First Aid):* Wash skin with plenty of water. Call physician if irritation develops.

*Ingestion (First Aid):* Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

*Inhalation:* Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Strong oxidizer. Contact with combustible materials may cause a fire. During a fire, this product decomposes to form toxic gases.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

*Lower Explosion Limits:* Not applicable

*Upper Explosion Limits:* Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: sulfur oxides.

**Fire / Explosion Hazards:** May react violently with: strong reducers combustible materials

*Static Discharge:* None reported.

*Mechanical Impact:* None reported

**Extinguishing Media:** Water.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.

**Clean-up Technique:** Remove all combustible materials from the spill area. Cover with an inert material, such as sand. Sweep up material. Incinerate material at an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

*Special Instructions (for accidental release):* Mixture contains a component which is regulated as hazardous waste.  
*304 EHS RQ (40 CFR 355):* Not applicable  
*D.O.T. Emergency Response Guide Number:* 140

---

## 7. HANDLING / STORAGE

*Handling:* Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

*Storage:* Keep away from: reducers oxidizable materials Protect from: moisture heat

*Flammability Class:* Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

*Engineering Controls:* Have an eyewash station nearby. Use a fume hood to avoid exposure to dust, mist or vapor.

*Personal Protective Equipment:*

*Eye Protection:* safety glasses with top and side shields

*Skin Protection:* lab coat disposable latex gloves

*Inhalation Protection:* laboratory fume hood

*Precautionary Measures:* Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling. Keep away from: oxidizable materials reducers

*TLV:* 5 mg/m<sup>3</sup>

*PEL:* Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

*Appearance:* White to light yellow crystals

*Physical State:* Solid

*Molecular Weight:* 270.32

*Odor:* None

*pH:* of 5% solution = 4.1

*Vapor Pressure:* Not applicable

*Vapor Density (air = 1):* Not applicable

*Boiling Point:* Not applicable

*Melting Point:* Decomposes at >100°C or 212°F

*Specific Gravity (water = 1):* 2.477

*Evaporation Rate (water = 1):* Not applicable

*Volatile Organic Compounds Content:* 0.0%

*Partition Coefficient (n-octanol / water):* Not determined

*Solubility:*

*Water:* Soluble

*Acid:* Not determined

*Other:* Not determined

*Metal Corrosivity:*

*Steel:* 0.704 in/yr

*Aluminum:* 0.137 in/yr

---

## 10. STABILITY / REACTIVITY

*Chemical Stability:* Stable when stored under proper conditions.

*Conditions to Avoid:* Excess moisture Exposure to air. Heating to decomposition.

*Reactivity / Incompatibility:* May react violently in contact with: oxidizable material reducers

*Hazardous Decomposition:* Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides

*Hazardous Polymerization:* Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

*Product Toxicological Data:*

*LD50:* Oral Rat LD50 = 802 mg/kg

*LC50:* None reported

*Dermal Toxicity Data:* None reported

***Skin and Eye Irritation Data:*** Testing showed only slight erythema to rabbit skin.  
***Mutation Data:*** None reported  
***Reproductive Effects Data:*** None reported  
***Ingredient Toxicological Data:*** --  
Not applicable

---

## 12. ECOLOGICAL INFORMATION

***Product Ecological Information:*** --  
No ecological data available for this product.  
***Ingredient Ecological Information:*** --  
Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

***EPA Waste ID Number:*** D001  
***Special Instructions (Disposal):*** Incinerate material at an E.P.A. approved hazardous waste facility.  
***Empty Containers:*** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.  
***NOTICE (Disposal):*** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

***D.O.T.:***  
***D.O.T. Proper Shipping Name:*** Potassium Persulfate  
--  
***DOT Hazard Class:*** 5.1  
***DOT Subsidiary Risk:*** NA  
***DOT ID Number:*** UN1492  
***DOT Packing Group:*** III  
***I.C.A.O.:***  
***I.C.A.O. Proper Shipping Name:*** Potassium Persulphate  
--  
***ICAO Hazard Class:*** 5.1  
***ICAO Subsidiary Risk:*** NA  
***ICAO ID Number:*** UN1492  
***ICAO Packing Group:*** III  
***I.M.O.:***  
***I.M.O. Proper Shipping Name:*** Potassium Persulphate  
--  
***I.M.O. Hazard Class:*** 5.1  
***I.M.O. Subsidiary Risk:*** NA  
***I.M.O. ID Number:*** UN1492  
***I.M.O. Packing Group:*** III

---

## 15. REGULATORY INFORMATION

***U.S. Federal Regulations:***  
***O.S.H.A.:*** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)  
***E.P.A.:***  
***S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):*** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Fire Hazard  
***S.A.R.A. Title III Section 313 (40 CFR 372):*** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.  
--  
***302 (EHS) TPQ (40 CFR 355):*** Not applicable  
***304 CERCLA RQ (40 CFR 302.4):*** Not applicable  
***304 EHS RQ (40 CFR 355):*** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**TSCA CAS Number:** 7727-21-1

---

## 16. OTHER INFORMATION

**Intended Use:** Laboratory Reagent

**References:** TLV's Threshold Limit Values and Biological Exposure Indices for 1992/1993. American Conference of Governmental Industrial Hygienists, 1992. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Technical Judgment. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548)- Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Inhouse information. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. CCINFO MSDS/FTSS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor).

**Revision Summary:**

---

### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

**HACH COMPANY ©2003**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00029

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolved Oxygen 1 Reagent  
**Catalog Number:** 98199

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00029  
**Chemical Name:** Sulfuric acid, manganese(2+) salt (1:1)  
**CAS No.:** 7785-87-7  
**Chemical Formula:**  $\text{MnSO}_4$   
**Chemical Family:** Inorganic Salt  
**Hazard:** May cause irritation. Cumulative poison. Experimental mutagen. Experimental teratogen.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Manganous Sulfate**  
**CAS No.:** 7785-87-7  
**TSCA CAS Number:** 7785-87-7  
**Percent Range:** 100.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** 0.2 mg/m<sup>3</sup> (Mn)  
**PEL:** Ceiling: 5 mg/m<sup>3</sup> (Mn)  
**Hazard:** May cause irritation. Cumulative poison. Experimental mutagen. Experimental teratogen.

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** Pink powder  
**Odor:** Not determined  
HARMFUL IF INHALED MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION

**HMIS:**  
**Health:** 2  
**Flammability:** 0  
**Reactivity:** 1  
**Protective Equipment:** X - See protective equipment, Section 8.  
**NFPA:**  
**Health:** 2  
**Flammability:** 0  
**Reactivity:** 1



**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** May cause irritation

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** Very large doses may cause: gastrointestinal irritation nausea

**Target Organs:** None reported

**Inhalation:** May cause: respiratory tract irritation pneumonitis

**Target Organs:** Lungs

**Medical Conditions Aggravated:** Pre-existing: Respiratory conditions Central nervous system diseases Liver conditions

**Chronic Effects:** Chronic inhalation of manganese (or Mn compounds) may cause psychiatric disorders characterized by irritability, difficulty walking, speech disturbances, and compulsive behavior. If the conditions persist, manganese poisoning may cause a mask-like facial expression, symptoms similar to Parkinson's disease, and cirrhosis of the liver.

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen. an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Give 1-2 glasses of water. Induce vomiting using syrup of ipecac or by sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as a hazardous air pollutant.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** Not applicable

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Store at 10 - 30°C. Keep away from: oxidizers powdered metals

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling. Use with adequate ventilation. Keep away from: oxidizers powdered metals

**TLV:** 0.2 mg/m<sup>3</sup> (Mn)

**PEL:** Ceiling: 5 mg/m<sup>3</sup> (Mn)

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Pink powder

**Physical State:** Solid

**Molecular Weight:** 151.01

**Odor:** Not determined

**pH:** 3.7 (5% sol'n)

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not determined

**Melting Point:** > 400°C (> 752°F)

**Specific Gravity (water = 1):** 3.25

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Not determined

**Other:** Insoluble in alcohol

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** 0.002 in/yr (0.051 mm/yr)

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures Heating to decomposition.

**Reactivity / Incompatibility:** Incompatible with: oxidizers powdered metals

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides manganese oxides

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

***Product Toxicological Data:***

***LD50:*** None reported

***LC50:*** None reported

***Dermal Toxicity Data:*** None reported

***Skin and Eye Irritation Data:*** None reported

***Mutation Data:*** Oral mouse sperm morphology @ 513 mg/kg/5D (Continuous); Hamster ovary cytogenetic analysis @ 180 mg/l; Hamster ovary sister chromatid exchange @ 5 mg/l; more data reported in RTECS.

***Reproductive Effects Data:*** Oral mouse TDLo = 513 mg/kg (Paternal effects- spermatogenesis).

***Ingredient Toxicological Data:*** --

Not applicable

---

## 12. ECOLOGICAL INFORMATION

***Product Ecological Information:*** --

No ecological data available for this product.

***Ingredient Ecological Information:*** --

Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

***EPA Waste ID Number:*** Not applicable

***Special Instructions (Disposal):*** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the material to the drain. Flush system with plenty of water.

***Empty Containers:*** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

***NOTICE (Disposal):*** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

***D.O.T.:***

***D.O.T. Proper Shipping Name:*** Not Currently Regulated

--

***DOT Hazard Class:*** NA

***DOT Subsidiary Risk:*** NA

***DOT ID Number:*** NA

***DOT Packing Group:*** NA

***I.C.A.O.:***

***I.C.A.O. Proper Shipping Name:*** Not Currently Regulated

--

***ICAO Hazard Class:*** NA

***ICAO Subsidiary Risk:*** NA

***ICAO ID Number:*** NA

***ICAO Packing Group:*** NA

***I.M.O.:***

***I.M.O. Proper Shipping Name:*** Not Currently Regulated

--

***I.M.O. Hazard Class:*** NA

***I.M.O. Subsidiary Risk:*** NA

***I.M.O. ID Number:*** NA

***I.M.O. Packing Group:*** NA

---

## 15. REGULATORY INFORMATION

***U.S. Federal Regulations:***

***O.S.H.A.:*** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

***E.P.A.:***

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Manganese compounds

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Manganese Compounds 1 lb.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**TSCA CAS Number:** 7785-87-7

---

## 16. OTHER INFORMATION

**Intended Use:** Laboratory Reagent

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. Cassaret and Doull's Toxicology, 3rd Ed. New York: Macmillan Publishing Co., Inc., 1986. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548)- Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Vendor Information.

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

**HACH COMPANY ©2002**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00028

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolved Oxygen 2 Reagent  
**Catalog Number:** 98299

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00028  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Toxic. Causes severe burns.  
**Date of MSDS Preparation:**  
**Day:** 27  
**Month:** January  
**Year:** 2003

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Potassium Iodide

**CAS No.:** 7681140  
**TSCA CAS Number:** 7681-11-0  
**Percent Range:** 30.0 - 40.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral Mouse LD50 = 1862 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes irritation.

### Lithium Hydroxide

**CAS No.:** 1310663  
**TSCA CAS Number:** 1310-65-2  
**Percent Range:** 55.0 - 65.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 225 mg/kg  
**LC50:** Inhalation rat LC50 = 980 mg/m<sup>3</sup>/4H  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic. Causes severe burns.

### Sodium Azide

**CAS No.:** 26628-22-8  
**TSCA CAS Number:** 26628-22 8  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 27 mg/kg; Oral mouse LD<sub>50</sub> = 27 mg/kg.  
**LC50:** None reported  
**TLV:** C: 0.29 mg/m<sup>3</sup> as Sodium azide; C 0.11 ppm as Hydrazoic acid vapor

**PEL:** Not established

**Hazard:** Highly toxic. May cause irritation. Cumulative poison. Experimental mutagen. Explosive. Contact with acid may generate toxic fumes.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White crystals

**Odor:** None

CAUSES SEVERE BURNS HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN

**HMIS:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes severe burns

**Skin Contact:** Causes severe burns

**Skin Absorption:** Toxic. Effects similar to those of ingestion

**Target Organs:** Central nervous system

**Ingestion:** Toxic Causes: severe burns hypotension May cause iodism, which symptoms include skin rash, conjunctivitis, runny nose, sneezing, bronchitis, headache, fever and irritation of mucous membranes. May cause: abdominal pain dizziness nausea vomiting respiratory stimulation convulsions followed by respiratory depression central nervous system effects kidney damage liver damage spleen damage lung damage coma death

**Target Organs:** Central nervous system Bone marrow Kidneys Liver Spleen Lungs

**Inhalation:** Causes: severe burns May cause: coughing shortness of breath bronchitis headache dizziness weakness respiratory stimulation convulsions followed by respiratory depression death

**Target Organs:** None reported

**Medical Conditions Aggravated:** Sodium azide produces a larger blood pressure drop in persons with high blood pressure than in persons with normal blood pressure. Preexisting: Eye conditions Skin conditions Respiratory conditions Kidney conditions Liver conditions

**Chronic Effects:** Lithium compounds have been implicated in development of aplastic anemia. Signs of lithium poisoning include dehydration, extreme weight loss, fine tremor of hands, nausea, vomiting and diarrhea, Chronic overexposure may cause headache central nervous system effects kidney damage liver damage

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen. an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Does not burn, but may melt in a fire, releasing toxic fumes. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** None reported

**Fire / Explosion Hazards:** Contact with metals gives off hydrogen gas which is flammable. Closed containers may explode if heated.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Carbon dioxide. Dry chemical. Water.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Avoid contact with spilled material. Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a weak acid solution.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as hazardous waste.

**304 EHS RQ (40 CFR 355):** Sodium Azide - RQ 1000 lbs.

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing. Do not breathe dust. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Store in a cool, dry place. Keep away from: metals acids / acid fumes.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing. Do not breathe: dust. Wash thoroughly after handling. Keep away from: metals acids/acid fumes

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White crystals

**Physical State:** Solid

**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** 12.6 (5% sol'n)  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** 110°C (230°F)  
**Specific Gravity (water = 1):** 1.94  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Not determined  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** Not determined  
    **Aluminum:** 0.248 in/yr (6.30 mm/yr)

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Excess moisture Extreme temperatures  
**Reactivity / Incompatibility:** May react violently in contact with: acids oxidizers  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: iodine iodine compounds potassium oxide nitrogen oxides sodium oxides Contact with metals may release flammable hydrogen gas.  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** Oral rat LD<sub>50</sub> = 350 mg/kg  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** Sodium Azide: DNA inhibition in human fibroblasts @ 50 mg/l; other data reported in RTECS.  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Lithium Hydroxide: Oral rat LD<sub>50</sub> = 225 mg/kg. Sodium Azide: Oral rat LD<sub>50</sub> = 27 mg/kg; Dermal rabbit LD<sub>50</sub> = 20 mg/kg.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** --  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002  
**Special Instructions (Disposal):** Never put unreacted azides down the drain! Dispose of material in an E.P.A. approved hazardous waste facility.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**



**D.O.T. Proper Shipping Name:** Lithium Hydroxide, Solid Mixture

--

**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN2680

**DOT Packing Group:** II

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Lithium Hydroxide, Solid Mixture

--

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN2680

**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Lithium Hydroxide, Solid

--

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN2680

**I.M.O. Packing Group:** II

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Sodium azide

**302 (EHS) TPQ (40 CFR 355):** Sodium Azide 500 lbs.

**304 CERCLA RQ (40 CFR 302.4):** Sodium azide 1000 lbs.

**304 EHS RQ (40 CFR 355):** Sodium Azide - RQ 1000 lbs.

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** The label for this product bears the signal word "POISON" because the concentration of Lithium Hydroxide in the product is greater than/ equal to 10%

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Determination of dissolved oxygen

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548)- Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Outside Testing. Technical Judgment.

**Revision Summary:** Updates in Section(s) 5, 13,

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**Legend:**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00007

# Material Safety Data Sheet

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolved Oxygen 3 Powder Pillows  
**Catalog Number:** 98799

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00007  
**Chemical Name:** Sulfamic Acid  
**CAS No.:** 5329-14-6  
**Chemical Formula:**  $\text{H}_3\text{NO}_3\text{S}$   
**Chemical Family:** Inorganic Acid  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 8  
**Month:** 04  
**Year:** 2003

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sulfamic Acid

**CAS No.:** 5329146  
**TSCA CAS Number:** 5329-14-6  
**Percent Range:** > 99.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 3160 mg/kg.  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes eye burns.

### Other component

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

---

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** White crystals

**Odor:** None

CAUSES EYE BURNS CAUSES SKIN AND RESPIRATORY TRACT IRRITATION

**HMIS:**

**Health:** 2

**Flammability:** 1

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2

**Flammability:** 1

**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** Causes severe irritation

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: irritation of the mouth and esophagus gastrointestinal irritation

**Target Organs:** None reported

**Inhalation:** May cause: irritation of nose and throat

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** Not applicable

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, irritating and highly toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** Toxic fumes of: ammonia nitrogen oxides. sulfur oxides.

**Fire / Explosion Hazards:** May react violently with: chlorine / chlorine compounds metal nitrates metal nitrites nitric acid

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Dry chemical. Water.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as RCRA hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe dust. Maintain general industrial hygiene practices when using this product.

**Storage:** Store away from: oxidizers alkalies chlorine/chlorinated metals Protect from: heat moisture

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling. Keep away from: alkalies metals Protect from: heat moisture

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White crystals

**Physical State:** Solid

**Molecular Weight:** 97.10

**Odor:** None

**pH:** 1% soln = 1.18

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** Product decomposes at 205 °C; 401 °F

**Specific Gravity (water = 1):** 2.15

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** None reported

**Solubility:**

**Water:** 1:2 ratio @ 80 °C (176 °F)

**Acid:** Soluble

**Other:** Slightly soluble in alcohol, methanol.

**Metal Corrosivity:**

**Steel:** 0.814 in/yr

**Aluminum:** 0.212 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heating to decomposition. Excess moisture

**Reactivity / Incompatibility:** May react violently in contact with: chlorates metal nitrates metalnitrates nitric acid  
Incompatible with: alkalies oxidizers

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: ammonia nitrogen oxides  
sulfur oxides

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** Oral rat LD50 = 3160 mg/kg.

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** Skin Human 4%/5 days intermittent MILD, Skin rabbit 500 mg/24H SEVERE, Eye rabbit 20mg MODERATE, Eye rabbit 250µg/24H SEVERE.

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** --

Not applicable

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Sulphamic Acid

--

**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN2967

**DOT Packing Group:** III

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Sulphamic Acid

--

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN2967

**ICAO Packing Group:** III

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Sulphamic Acid

--

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN2967

**I.M.O. Packing Group:** III

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**TSCA CAS Number:** 5329-14-6

---

## 16. OTHER INFORMATION

**Intended Use:** Laboratory Reagent

**References:** Vendor Information. NIOSH Registry of Toxic Effects of Chemical Substances, 198586. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. Outside Testing. Technical Judgment. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992/1993. American Conference of Governmental Industrial Hygienists, 1992.

**Revision Summary:**

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00112

# Material Safety Data Sheet

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Buffer Powder Pillows pH 7.00  $\pm$  0.02 @ 25°C  
**Catalog Number:** 2227095

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00112  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause irritation.  
**Date of MSDS Preparation:**  
**Day:** 26  
**Month:** 03  
**Year:** 2003

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Potassium Phosphate, Monobasic

**CAS No.:** 7778770  
**TSCA CAS Number:** 7778-77-0  
**Percent Range:** 40.0 - 50.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 7100 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

### Other component

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** 0.1 - 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

### Sodium Phosphate, Dibasic

**CAS No.:** 7558794  
**TSCA CAS Number:** 7558-79-4  
**Percent Range:** 50.0 - 60.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 17 g/kg.  
**LC50:** None reported

**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Light yellow powder  
**Odor:** Not determined  
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION

**HMIS:**

**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0  
**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0  
**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** MAY CAUSE IRRITATION  
**Skin Contact:** No effects are anticipated  
**Skin Absorption:** No effects anticipated  
**Target Organs:** Not applicable  
**Ingestion:** Very large doses may cause: gastrointestinal irritation nausea vomiting diarrhea fever lethargy muscular cramps cardiac depression kidney damage  
**Target Organs:** Heart Kidneys  
**Inhalation:** May cause: respiratory tract irritation  
**Target Organs:** None reported  
**Medical Conditions Aggravated:** Pre-existing: Kidney conditions Cardiovascular diseases  
**Chronic Effects:** None reported  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any OSHA listed carcinogens.  
  
This product does NOT contain any IARC listed chemicals.  
  
This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.  
**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.  
**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.  
**Inhalation:** Remove to fresh air.

---

### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, corrosive and toxic gases may be generated by thermal decomposition.  
**Flash Point:** Not applicable  
**Method:** Not applicable  
**Flammability Limits:**  
**Lower Explosion Limits:** Not applicable  
**Upper Explosion Limits:** Not applicable



**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** Toxic fumes of: phosphorus oxides

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Sweep up material. Dilute with a large excess of water. Flush the spilled material to the drain with a large excess of water.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as a water pollutant.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes. Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store at 10 - 30°C. Protect from: heat moisture

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes. Do not breathe: dust. Wash thoroughly after handling. Protect from: heat moisture

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Light yellow powder

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** Not determined

**pH:** 15.8% solution = 7.0

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** ~160° C (~320° F)

**Specific Gravity (water = 1):** 2.40

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

*Acid:* Not determined  
*Other:* Insoluble in alcohol  
*Metal Corrosivity:*  
*Steel:* Not determined  
*Aluminum:* Not determined

---

## 10. STABILITY / REACTIVITY

*Chemical Stability:* Stable when stored under proper conditions.  
*Conditions to Avoid:* Excess moisture Extreme temperatures  
*Reactivity / Incompatibility:* None reported  
*Hazardous Decomposition:* Heating to decomposition releases toxic and/or corrosive fumes of: phosphorus oxides  
*Hazardous Polymerization:* Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

*Product Toxicological Data:*  
*LD50:* None reported  
*LC50:* None reported  
*Dermal Toxicity Data:* None reported  
*Skin and Eye Irritation Data:* Sodium Phosphate Dibasic: Eye rabbit 500 mg/24H = MILD, Skin rabbit 500 mg/24H = MILD  
*Mutation Data:* None reported  
*Reproductive Effects Data:* None reported  
*Ingredient Toxicological Data:* Sodium Phosphate Dibasic: Oral rat LD50 = 17 g/kg; Potassium Phosphate Monobasic: Oral rat LD50 = 7100 mg/kg, Dermal rabbit LD50 >7940 mg/kg

---

## 12. ECOLOGICAL INFORMATION

*Product Ecological Information:* --  
No ecological data available for this product.  
*Ingredient Ecological Information:* --  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

*EPA Waste ID Number:* None  
*Special Instructions (Disposal):* Dilute to 3 to 5 times the volume with cold water. Open cold water tap completely, slowly pour the material to the drain. Allow cold water to run for 5 minutes to completely flush the system.  
*Empty Containers:* Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
*NOTICE (Disposal):* These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

*D.O.T.:*  
*D.O.T. Proper Shipping Name:* Not Currently Regulated  
--  
*DOT Hazard Class:* NA  
*DOT Subsidiary Risk:* NA  
*DOT ID Number:* NA  
*DOT Packing Group:* NA  
*I.C.A.O.:*  
*I.C.A.O. Proper Shipping Name:* Not Currently Regulated  
--  
*ICAO Hazard Class:* NA  
*ICAO Subsidiary Risk:* NA  
*ICAO ID Number:* NA  
*ICAO Packing Group:* NA

***I.M.O.:***

***I.M.O. Proper Shipping Name:*** Not Currently Regulated

--

***I.M.O. Hazard Class:*** NA

***I.M.O. Subsidiary Risk:*** NA

***I.M.O. ID Number:*** NA

***I.M.O. Packing Group:*** NA

---

## 15. REGULATORY INFORMATION

***U.S. Federal Regulations:***

***O.S.H.A.:*** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

***E.P.A.:***

***S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):*** Immediate (Acute) Health Hazard

***S.A.R.A. Title III Section 313 (40 CFR 372):*** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

***302 (EHS) TPQ (40 CFR 355):*** Not applicable

***304 CERCLA RQ (40 CFR 302.4):*** Sodium phosphate, dibasic 5000 lbs.

***304 EHS RQ (40 CFR 355):*** Not applicable

***Clean Water Act (40 CFR 116.4):*** Sodium phosphate, dibasic - RQ 5000 lbs.

***RCRA:*** Contains no RCRA regulated substances.

***C.P.S.C.:*** Not applicable

***State Regulations:***

***California Prop. 65:*** No Prop. 65 listed chemicals are present in this product.

***Identification of Prop. 65 Ingredient(s):*** None

***Trade Secret Registry:*** Not applicable

***National Inventories:***

***U.S. Inventory Status:*** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

***TSCA CAS Number:*** Not applicable

---

## 16. OTHER INFORMATION

***Intended Use:*** Buffer

***References:*** Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 23322983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992/1993. American Conference of Governmental Industrial Hygienists, 1992. In-house information. Technical Judgment. Vendor Information. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993.

***Revision Summary:***

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00369

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Buffer Solution pH 7.00  $\pm$  0.02  
**Catalog Number:** 2283549

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00369  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Practically non-toxic.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 732 -18-5  
**Percent Range:** >95.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other components, each

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** volume / volume  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** Clear, yellow liquid  
**Odor:** None

**HMIS:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** No Effects Anticipated

**Target Organs:** Not applicable

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** No effects anticipated

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** None reported

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Absorb spilled liquid with non-reactive sorbent material. Place material in a plastic bag. Mark bag 'Non-hazardous trash', and dispose of as normal refuse.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Wash thoroughly after handling.

**Storage:** Protect from: heat Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** Not applicable

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling.

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, yellow liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 7.0 at 20°C

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** ~100°C (~212°F)

**Melting Point:** ~0°C (~32°F)

**Specific Gravity (water = 1):** ~1.0

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not determined

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heat Evaporation

**Reactivity / Incompatibility:** None reported

**Hazardous Decomposition:** None reported

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** None reported

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Open cold water tap completely, slowly pour the material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and maybe superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Toxic Substances Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Buffer

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information.

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00851

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Nitrate Nitrogen Standard Solution  
**Catalog Number:** 204649

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00851  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Practically non-toxic.  
**Date of MSDS Preparation:**  
**Day:** 4  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** > 99.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other component

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 0.1  
**Percent Range Units:** volume / volume  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

### Potassium Nitrate

**CAS No.:** 7757791  
**TSCA CAS Number:** 7757-79-1  
**Percent Range:** < 0.1  
**Percent Range Units:** weight / volume  
**LD50:** Oral rat LD50 = 3750 mg/kg; Oral rabbit LD50 = 1901 mg/kg  
**LC50:** None reported

**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Oxidizer. May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** None

**HMIS:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** No Effects Anticipated

**Target Organs:** Not applicable

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** No effects anticipated

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

---

### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling.

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 5.3

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** 100°C

**Melting Point:** Not determined

**Specific Gravity (water = 1):** 0.98

**Evaporation Rate (water = 1):** 0.89

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

*Acid:* Soluble  
*Other:* Not determined  
*Metal Corrosivity:*  
*Steel:* Not determined  
*Aluminum:* Not determined

---

## 10. STABILITY / REACTIVITY

*Chemical Stability:* Stable when stored under proper conditions.  
*Conditions to Avoid:* Extreme temperatures  
*Reactivity / Incompatibility:* None reported  
*Hazardous Decomposition:* None reported  
*Hazardous Polymerization:* Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

*Product Toxicological Data:*  
*LD50:* None reported  
*LC50:* None reported  
*Dermal Toxicity Data:* None reported  
*Skin and Eye Irritation Data:* None reported  
*Mutation Data:* None reported  
*Reproductive Effects Data:* None reported  
*Ingredient Toxicological Data:* Potassium Nitrate: Oral rat LD<sub>50</sub> = 3750 mg/kg; Oral rabbit LD<sub>50</sub> = 1901 mg/kg

---

## 12. ECOLOGICAL INFORMATION

*Product Ecological Information:* --  
No ecological data available for this product.  
*Ingredient Ecological Information:* --  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

*EPA Waste ID Number:* None  
*Special Instructions (Disposal):* Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain.  
*Empty Containers:* Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
*NOTICE (Disposal):* These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

*D.O.T.:*  
*D.O.T. Proper Shipping Name:* Not Currently Regulated  
--  
*DOT Hazard Class:* NA  
*DOT Subsidiary Risk:* NA  
*DOT ID Number:* NA  
*DOT Packing Group:* NA  
*I.C.A.O.:*  
*I.C.A.O. Proper Shipping Name:* Not Currently Regulated  
--  
*ICAO Hazard Class:* NA  
*ICAO Subsidiary Risk:* NA  
*ICAO ID Number:* NA  
*ICAO Packing Group:* NA  
*I.M.O.:*

***I.M.O. Proper Shipping Name:*** Not Currently Regulated

--

***I.M.O. Hazard Class:*** NA

***I.M.O. Subsidiary Risk:*** NA

***I.M.O. ID Number:*** NA

***I.M.O. Packing Group:*** NA

---

## 15. REGULATORY INFORMATION

### ***U.S. Federal Regulations:***

***O.S.H.A.:*** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### ***E.P.A.:***

***S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):*** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

***S.A.R.A. Title III Section 313 (40 CFR 372):*** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

***302 (EHS) TPQ (40 CFR 355):*** Not applicable

***304 CERCLA RQ (40 CFR 302.4):*** Not applicable

***304 EHS RQ (40 CFR 355):*** Not applicable

***Clean Water Act (40 CFR 116.4):*** Not applicable

***RCRA:*** Contains no RCRA regulated substances.

***C.P.S.C.:*** Not applicable

### ***State Regulations:***

***California Prop. 65:*** WARNING - This product contains a chemical known to the State of California to cause cancer.

***Identification of Prop. 65 Ingredient(s):***Chloroform

***Trade Secret Registry:*** Not applicable

### ***National Inventories:***

***U.S. Inventory Status:*** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

***TSCA CAS Number:*** Not applicable

---

## 16. OTHER INFORMATION

***Intended Use:*** Standard solution

***References:*** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information.

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

**HACH COMPANY ©2002**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00224

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Phosphate Standard Solution, 1 mg/l as PO<sub>4</sub>  
**Catalog Number:** 256949

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00224  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** No effects anticipated.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732185  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** > 99.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other components, each

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / volume  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** Clear, colorless liquid  
**Odor:** None

**HMIS:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** No Effects Anticipated

**Target Organs:** Not applicable

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** No effects anticipated

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** No

**Mechanical Impact:** No

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes. Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes. Do not breathe: mist/vapor

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 5

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** ~100 °C (~212 °F)

**Melting Point:** Not applicable

**Specific Gravity (water = 1):** 0.986

**Evaporation Rate (water = 1):** 0.99

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures

**Reactivity / Incompatibility:** None reported



**Hazardous Decomposition:** No hazardous decomposition products known.

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Potassium Phosphate, Monobasic: Oral rat LD50 = 7100 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information: --**

No ecological data available for this product.

**Ingredient Ecological Information: --**

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Standard solution

**References:** TLV's Threshold Limit Values and Biological Exposure Indices for 1992/1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. In-house information. Technical Judgment.

---

### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M02077

# Material Safety Data Sheet

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Drinking Water Inorganics Quality Control Standard NIST Traceable 1 mg/L F, 2 mg/L  $\text{NO}_3^-$  2 mg/L  $\text{PO}_4$  50 mg/L  $\text{SO}_4$

**Catalog Number:** 2833049

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M02077

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Hazard:** Practically non-toxic.

**Date of MSDS Preparation:**

**Day:** 15

**Month:** 07

**Year:** 2002

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732185

**TSCA CAS Number:** 7732-18-5

**Percent Range:** > 90.0

**Percent Range Units:** weight / weight

**LD50:** None reported

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** No effects anticipated.

### Other components, each

**CAS No.:** Not applicable

**TSCA CAS Number:** Not applicable

**Percent Range:** < 0.1

**Percent Range Units:** weight / weight

**LD50:** Not applicable

**LC50:** Not applicable

**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** None

**HMIS:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** No Effects Anticipated

**Target Organs:** Not applicable

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** No effects anticipated

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. If you feel unwell, contact a physician.

**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C. Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling.

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** Not determined

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** Not determined

**Melting Point:** Not determined

**Specific Gravity (water = 1):** ~1.00

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures Evaporation

**Reactivity / Incompatibility:** None reported  
**Hazardous Decomposition:** No hazardous decomposition products known.  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** --

No toxicological data available for the ingredients of this product.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Open cold water tap completely, slowly pour the reacted material to the drain. Flush system with plenty of water.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

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**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

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## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

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**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

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## 16. OTHER INFORMATION

**Intended Use:** Standard solution

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. Technical Judgment. In-house information. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

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### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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